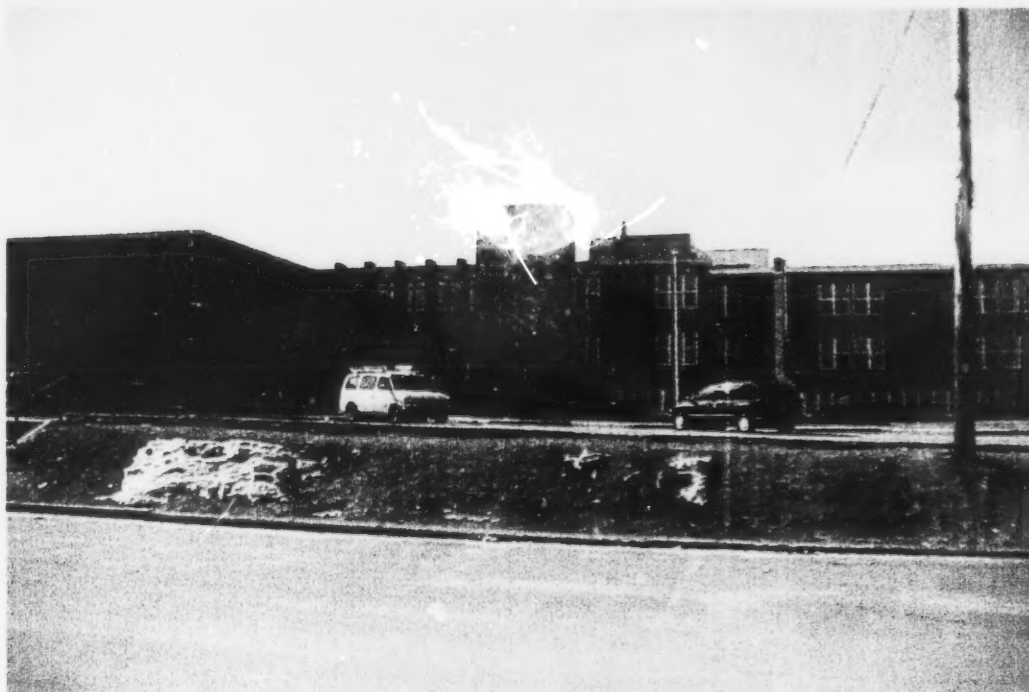


SIR JOHN A. MACDONALD HIGH SCHOOL EVALUATION
STATUS UPDATE NO. 2 (AS OF APRIL 10, 2002)



This is the second update on the Sir John A. MacDonald High School Evaluation (SJAMHS) and is provided on behalf of the Nova Scotia Department of Education (DOE), the Halifax Regional School Board (HRSB), the Sir John A. Macdonald High School Joint Occupational Health and Safety Committee (JOHSC) and the School Advisory Council (SAC). This summary report provides an update on the status of the High School Evaluation. Background and other related introductory information may be found in the March 18, 2002 update available on the SJAMHS web site.

THE EVALUATION

The prime objectives of the Facility Evaluation Team are to identify and document Health, Safety and Program issues and to prepare a report on the findings with recommendations.

The project is a comprehensive evaluation of the school building and site and covers facility deficiencies, assessment of the site including the general grounds, site services, building envelope, mechanical systems, electrical systems, general maintenance and operations, building code and

accessibility, public school program, demographics, mycology, indoor air quality and environmental site matters.

The Facility Evaluation Team consists of representatives of the Nova Scotia Department of Education, the Nova Scotia Department of Transportation and Public Works and specialist consultants. Collectively, the team possesses a broad range of specialized technical expertise in the area of facility assessment and design, architecture, mechanical and electrical engineering, building code, mycology, indoor air quality, environmental engineering and building cleanliness.

Input is being provided to the Evaluation Team by SJAMHS administration, staff, students, JOHSC, SAC and the HRSB. In fact the JOHSC and SAC, through the Communications Committee, have regular input to the Evaluation Program and the Evaluation Team.

The focus since the last Status Update has been on the Environmental Site Assessment, mycology and indoor air quality and the building envelope. Following are comments on each of these aspects of the evaluation:

- **Environmental Site Assessment (ESA)** - The ESA is generally following the phased approach adopted by the Canadian Ministers of the Environment. Phase I is a non-intrusive investigation of the site and its history to determine the likelihood of substances of concern. Phase II is an intrusive testing program which confirms the presence or absence of substances of concern and it may recommend remediation or further investigation if necessary.

The Phase I ESA was completed and identified several areas to be investigated further, specifically:

1. Surface stains around the fill pipe for the underground fuel oil storage tank adjacent to the high school.
2. The existing underground fuel oil tank at the Annex, as well as past underground fuel oil tanks believed to have been at the same location.

3. Wastewater discharge to the treatment plant and effluent discharge from the plant and Annex lift station.
4. Three former underground petroleum storage tanks, two former petroleum dispensers and two former above ground tanks adjacent to the former bus garage and south of the high school.
5. Petroleum hydrocarbon staining adjacent to and south of the former school bus maintenance garage.
6. Handling and storage procedures of waste oils and used glycol at the former bus garage.
7. Former chemical solvent, used automotive batteries and abandoned bus parts located in areas north and west of the former bus garage.
8. Concerns related to off-site PCB contamination and reported dry cleaning solvent releases.
9. Water quality of the on-site potable water well.
10. Miscellaneous debris present along the southern property boundary.
11. Naturally occurring radon.

From this it can be seen that the majority of the concerns relate to the following:

- petroleum impacted soils and groundwater
- debris associated with automobile/vehicle repair
- off-site concerns related to PCB's
- well water quality
- naturally occurring contamination including radon

- potential environmental concerns related to wastewater discharge from the sewage treatment plant and the lift station at the Annex.

The results of the Phase I ESA program formed the basis for the Phase II field program which commenced early March and continued through to early April. The initial program included drilling of nine boreholes, but the program was expanded partly in response to input from the JOHSC and SAC. This has resulted in a more exhaustive program than originally intended and has taken longer to complete than originally intended. However, there was much information collected on the site and much in terms of testing results will be available soon.

The Phase II ESA also consisted of soil, sediment, surface water and groundwater investigations and covered:

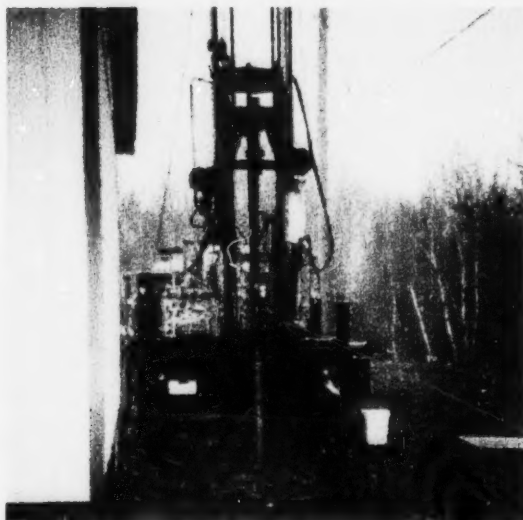
- Intrusive investigation and sampling of surface and sub-surface soils through a test pit program using tracked excavators and a drilling program using both tracked and truck mounted drilling rigs.
- Investigation of the groundwater quality through the installation and sampling of monitoring wells.
- Sampling and analysis on the potable water supply.
- Intrusive investigation and sampling of soils under the building floor slab through hand excavation of test pits.
- Geiger Counter Sweep of the school exterior and interior for evidence of anomalous radioactivity.
- Sampling of the main school building for radon gas.
- Sampling of surface water and sediment from the liquid waste-stream outfall locations (from the sewage treatment plant).
- Laboratory analysis of the above noted samples for a wide range of organic and inorganic parameters.

There were 15 test pits
tracked excavator
key areas:



excavated on site using a
covering the following

- former underground waste oil tank near the former bus garage
- west wall of the former bus garage
- area know as the "oily pond" (adjacent to former bus garage)
- area where old buses were stripped and scrap batteries and other bus parts were stored
- area between the existing school fuel oil storage tank and the south wing of the school
- other areas primarily around the southwest end of the site related to the former bus maintenance facility.



A total of 17 boreholes were drilled through the soil overburden and extended into the underlying bedrock. The boreholes were drilled in various locations over the site including the area of the former bus garage. Monitoring wells were also installed around the underground fuel oil tanks and sewage lift station next to the Annex. Holes were drilled around the school, down site-gradient of the former bus garage and between the underground fuel oil storage tank and the south wing of the school.

Fourteen of the 17 boreholes drilled were converted to monitoring wells and are equipped with an inner casing and cap. Each well is sealed at the top to prevent migration of the surface flow into the monitoring well. These monitoring wells are used to collect groundwater samples for testing and to monitor the groundwater levels including possible migration of any contaminants.

The following sampling was carried out on the site:

- Surface water and sediment samples were collected from three outfall locations of liquid waste-streams exiting the school property including the suspected outfall location of the sewage lift station overflow pipe (believed to be from the Annex), the storm water drainage pipe from the high school site and surface water and sediment sample from the dry well location that receives treated effluent from the sewage treatment plant. At these locations, geophysical parameters of the surface water (e.g. temperature, pH and conductivity) were recorded.
- Surface soil samples were collected from eight areas at and adjacent to the site to assess the potential for polychlorinated biphenyl compounds (PCBs).
- Potable water (sampled directly from the water reservoir).
- Investigation of the sub-floor soil and groundwater quality which included sawcutting and removal of the concrete floor slab and excavation of the sub-floor soils in six locations.
- Soil samples collected at or near the groundwater table.
- A Geiger Counter Sweep was conducted. The sweep was done to assess the potential for naturally occurring radioactivity emanating from a bedrock underlying site.



- Radon sampling was undertaken to assess the potential for the naturally occurring radioactive gas which is produced by the decay of uranium. Radon sampling was conducted at five locations in the basement level of the school. Three of the samples were collected directly over the open test pit excavations and two other samples were collected from the central stairway and from the hallway outside of Room 149.

There were over 120 samples covering soils, water and sediments which were collected from the site and tested. The results of the testing done to date show that some refuse removal and remediation of the soils, particularly in the areas of the former bus garage and sewage treatment plant outfalls may be required. This is not viewed as a major issue. Indications from the ESA to date are that there are no other environmental concerns with respect to the site.

INDOOR AIR QUALITY PROGRAM (IAQ)

The IAQ Program is well underway and will soon be complete. The IAQ Program will cover ultrafine particulates, gases, volatile organic compounds (VOC's), radon and ventilation supply air volumes. At the request of SAC, an independent Peer Reviewer (specialist consultant) has been engaged jointly by DOE, SAC and HRSB. The Peer Reviewer's involvement will be:

1. Visit school with representatives of TPW, HRSB and SAC to view conditions on site and review key issues.
2. Review documented symptoms from students and staff.
3. Review the draft IAQ Program and make recommendations for additional testing.
4. Liaise with Communication Committee and other Evaluation Team members.
5. Review test results from the IAQ Program.
6. Preparation of summary report on test procedures used and test results.
7. Other input as required.

One of the first tasks undertaken by the Peer Reviewer, in conjunction with the Evaluation Team, HRSB and SAC was to investigate the possibility of fumes being re-circulated from the Boiler Room exhaust into the air intakes of Air Handling Units #1, #2 and #3 which are located on the lower level of the West Wing. AHU #1, 2, and 3 supply ventilation air to the basement floor of north wing, the west wing and the south wing. It was determined from on-site observations that there is a potential link between the Boiler Room exhaust/intake and the air handling unit intakes. This will be addressed in the evaluation report.

To date there have been VOC samples taken, representative of each wing and each floor, nitrogen dioxide (NO₂) samples taken, one each floor of each wing, respirable dust (pumps and mass weight filters) and electronic measurements for hydrogen sulfide (H₂S) and sulfur dioxide (SO₂).

Additional testing is being carried out with assistance from the Peer Reviewer and specialists with the Evaluation Team.

The microbiological evaluation is continuing and the field investigation work will be completed soon. The interior of the school has some areas of minor mold growth which can be easily remediated and there are several ceiling tiles which have water stains, but these are believed to be the result of episodic leakage in the past and are not considered to be chronic. There was also frank mold growth identified in three localized areas inside the school, but these were quickly isolated and remediated by the HRSB.

BUILDING ENVELOPE

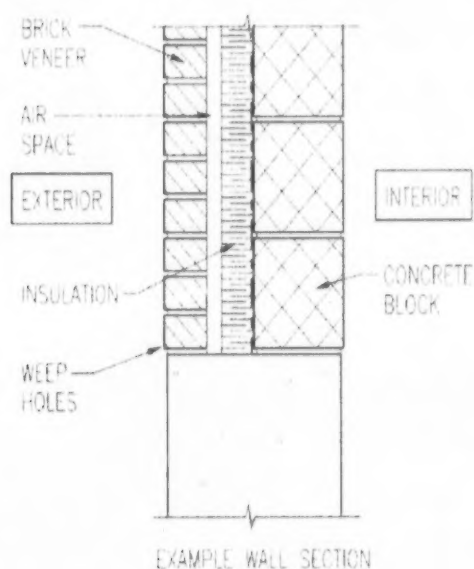
A joint inspection of the building exterior wall assembly was carried out by the project architect and mycologist (mold specialist). It is known from previous investigations carried out for the Board (1998) that the cladding system was permitting water to infiltrate in various locations and to various degrees. As a result of that investigation the Board undertook replacement of windows and provision of new prepainted steel cladding primarily on the east face of the north wing.

The majority of the exterior wall construction at SJAMHS is known as "cavity wall" construction. It is widely used in North America.

The wall assembly consists of an exterior brick masonry veneer, an air space (or cavity) and insulation bonded to the hollow concrete block back-up which also forms the interior wall finish. The air space provides a path for water, which may penetrate the veneer, to drain to the bottom and then escape through weep holes in the bottom of the brick.

The underlying principle in cavity wall construction is that the air space, provided on the inside of the wall assembly behind the brick veneer, facilitates drainage of water that may enter the wall assembly.

The current evaluation is being done in stages:



1. The first stage involved inspection of the interior space of the exterior wall assembly. This was facilitated by the removal of the interior wall finish in several locations. The inspection did not show any significant signs of water infiltration. There was minor evidence of rot in the exterior wall plywood sheathing (this plywood sheathing is located over and under windows) and a thumbnail size patch of mold in one location which is associated with condensation related moisture.
2. The second stage of the investigation was carried out by removing the exterior brick veneer to allow inspection of the interior wall cavity (space behind the brick) and to view the insulation in the wall assembly. This was carried out in four localized areas on the east face of the building in areas believed to have previously leaked. In fact, one of the areas showed some minor masonry deterioration (i.e. the mortar was cracked) which would have been a source for moisture ingress. This limited investigation showed that the insulation paper facing in three of the four areas was wet. There was evidence of mold growth. The investigation of the exterior wall assembly is ongoing to determine the extent of the mold and if the mold growth is impacting indoor air quality in the school.

DEMOGRAPHICS

HRSB is preparing enrollment projections for SJAMHS considering growth in the area over the last decade, and considering the significant number of new housing developments planned in the area. The results of HRSB's projections will be included in the final evaluation report.

OTHER ITEMS

Other aspects of the evaluation, preparation of recommendations and cost estimates are underway.

It is planned that the final report will be completed by the Evaluation Team at the end of April or possibly early May, at which time it will be presented to the Department of Education.

It is emphasized that there has been major contributions to the evaluation process by the stakeholders. The school administration, staff, JOHSC and SAC committees and HRSB Operations Staff have devoted significant amounts of their personal time to attend regular meetings, to accompany evaluators during the investigations at the school, to attend other special meetings and provide input throughout the entire process. The overall process and the final evaluation report will benefit from this valuable input.

The Evaluation Team extends its thanks to all those who have contributed.

Direct comments or questions by e-mail to sja@ednet.ns.ca